CLAIMS

What is claimed is:

1.   A local monitor unit for transmitting status information formed of a plurality of pieces of status information indicating an operation state of a machine to be monitored to an integrated monitor unit through a computer network, said local monitor unit comprising:

a local information getting unit for getting the status information of the machine connected to a first-type local computer network by identifying an address of the machine;

a local information retaining unit for retaining the status information obtained by the local information getting unit and individual information of the machine;

a local information transmitting unit for transmitting at least a part of the plurality of pieces of the status information retained in the local information getting unit to the integrated monitor unit through a second-type wide area computer network; and

a machine information transmitting unit for transmitting a machine information to the integrated monitor unit through the second-type wide-area computer network, the machine information being employed for registering the machine to be monitored and the first-type local computer network connected to the machine prepared based on the individual information retained by the local information retaining unit into the integrated monitor unit;

wherein the integrated monitor unit identifies the status information is for which machine to be monitored and connected to which first-type local computer network, based on the machine information registered in the integrated monitor unit, to thereby make a predetermined display display the status information, the status information being transmitted

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by each of a plurality of local monitor units at a unique timing set by each of the plurality of local monitor units uniquely.

2.   A local monitor unit according to claim 1, wherein said local information getting units gets the status information in a first period,

said local information retaining unit updates the status information of the machine whose operation state has been changed into the most recent status information before transmitting the status information to said integrated monitor unit, and

said local information transmitting unit transmits the most recent status information of the machine to the integrated monitor unit at once in a second period longer than the first period.

3.   A local monitor unit according to claim 2, further including a state determination unit for determining whether or not the status information gotten by said local information getting unit indicates an abnormal state of the machine,

wherein said local information getting unit gets the status information in a period shorter than the .first period only while said state determination unit determines that the status information indicates an abnormal state of the machine.

4.   A local monitor unit according to claim 3, wherein said local information getting unit gets the status information of a plurality of machines and while said state determination unit determines that the status information gotten from a specific machine indicates an abnormal state of the machine, gets the status information only from the specific machine in a period shorter than the first period.

5.   A local monitor unit according to claim 2, further including a state determination unit for determining whether or not the status information gotten by said local information getting unit indicates an abnormal state of the machine,

wherein when said state determination unit starts to determine that the status information indicates a fatal error of the machine, said local information transmission unit transmits information indicating the fatal error to the integrated monitor unit regardless of the second period.

6.   A local monitor unit according to claim 5,

wherein when said state determination unit determines that the fatal error is solved within a predetermined time or the fatal error continues over a predetermined time, said local information transmission unit transmits status information indicating the fact to the integrated monitor unit regardless of the second period.

7.   A local monitor unit according to claim 1, further including a display unit for displaying a main screen for indicating information concerning every machine connected through the first-type computer network and a subscreen for indicating detailed information concerning a specific machine specified on the main screen.

8.   An integrated monitor unit which can communicate with a plurality of local monitor units through a second-type global computer network, each of the local monitor units monitoring an operation state of each of machines to be monitored through a first-type local computer network, said integrated monitor unit comprising:

a global information getting unit for getting status information indicating the operation state of the machine to be monitored by any one of the local monitor unit from said local monitor unit through the second-type global computer network;

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a database for storing information concerning each of the machines;

a database management unit for updating said database based on the status information gotten by said global information getting unit;

a display unit for displaying the information stored on said database; and

a machine information receiving unit for receiving machine information for registering said machine of which operation state is transmitted by the local monitor unit voluntarily and the first-type local computer network connected to said machine through the second-type global computer network,

wherein each of local monitor units transmits the status information of the machine at a timing uniquely set for each local monitor unit, and

said database management unit registers the machine information received through the second-type global computer network into said database and identifies the status information is for which machine connected to any one of the first-type computer network based on said registered machine information.

9.   An integrated monitor unit according to claim 8, wherein said database also stores the past status information of the machines gotten by said global information getting unit, and wherein said display unit displays a main screen for indicating the status information of the machines connected through the first-type local computer network and a subscreen for indicating a history of the status information of a specific machine specified on the main screen.

10.   An integrated monitor unit according to claim 9, wherein the main screen indicates the most recent status information of each machine.

11.   An integrated monitor unit according to claim 9, wherein the main screen indicates the status information of machines grouped for each first-type local computer network.

12.   An integrated monitor unit according to claim 9, wherein the status information contains information indicating the remaining amount of a consumable article and wherein the subscreen for indicating a history of the status information of a specific machine displays a history of the remaining amounts of the consumable article of the machine.

13.   An integrated monitor unit according to claim 8, wherein the status information contains remaining amount information of a consumable article of each of machines, and said integrated monitor unit further comprises:

a statistical processing unit for predicting statistics of the remaining amount of the consumable article based on the status information; and

an output unit for outputting the remaining amount statistics of the consumable article predicted by said statistical processing unit.

14.   A machine monitor system for executing centralized monitor of status information indicating an operation state of each of machines to be monitored, said machine monitor system comprising:

a plurality of local monitor units for respectively transmitting status information of machines to be monitored at a timing uniquely set for each local monitor unit, each of the machines being connected to a first-type local computer network; and

an integrated monitor unit for receiving and monitoring the status information transmitted from each of the local monitor units through a second-type global computer network,

wherein each of the local monitor units comprises a transmitting unit for voluntarily transmitting to said integrated monitor unit machine information for registering said machine of which operation state is transmitted by the local monitor unit arid the first-type local computer network connected to said machine into said integrated monitor unit through the second-type global computer network, and

wherein said integrated monitor unit comprises:

a receiving unit for receiving the machine information transmitted from each of the local monitor units; and

a unit for registering the received machine information and identifying the status information is for which machine connected to any one of the first-type computer network based on said registered machine information to thereby displaying the status information on a given display.

15. A machine monitor method comprising:

a local monitor step of monitoring an operation state of each of machines through a first-type local computer network; and

a global monitor step of monitoring said operation state of said machine connected the first-type local computer network through a second-type global computer network,

wherein said local monitor step comprises:

a local information .getting step of getting the status information of the machines;

a local information retention step of retaining the gotten status information;

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a local information transmission step of sending the retained status information to the second-type global computer network at a uniquely set timing; and

a machine information transmission step of voluntarily sending to the second-type global computer network machine information for registering said machine of which operation state is transmitted by the local monitor unit and the first-type local computer network connected to said machine at said global monitor step,

wherein said global monitor step comprises:

a machine information getting step of getting the status information through the second-type global computer network;

a machine information registration step of registering the gotten status information into a database for storing information concerning the machine to be monitored;

a global information getting step of getting the information through the second-type global computer network;

a status information management step of identifying the status information gotten at said global information getting step is for which machine connected to any one of the first-type computer network based on said registered machine information and updating the storing information concerning the machine in the database by the identified status information; and

a display step of displaying the updated and stored information on a given display.

16. A machine monitor method according to claim 15, wherein the status information contains remaining amount information of a consumable article of each of machines, and said global monitor step comprises:

a statistical processing unit of predicting statistics of the remaining amount of the consumable article based on the status information; and

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an output step of outputting the remaining amount statistics of the consumable article predicted by said statistical processing unit.

17.   A computer-readable medium storing a program for causing a computer which is connected to a machine to be monitored through a first-type local computer network and can communicate with an; integrated monitor unit through a second-type global computer network to execute:

a local information getting step of getting status information indicating an operation state of the machine to be monitored;

a local information retaining step of retaining the gotten status information;

a local information transmission step of transmitting the retained status information to the integrated monitor unit through the second-type global computer network at a uniquely set timing;

a machine information transmission step of voluntarily transmitting the machine information for registering said machine of which operation state is transmitted and the first-type local computer network connected to said machine into the integrated monitor unit through the second-type global computer network;

whereby the computer makes the integrated monitor unit to display the status information for which machine connected to any one of the first-type computer network based on the machine information registered in the machine information on a given display.

18.   A computer-readable medium storing a program for causing a computer which is capable of communicating with each of a plurality of local monitor units through a second-type global computer network, each local monitor unit connected to each of machines to be monitored through a first-type local computer network, and can communicate with an integrated monitor unit, to execute:

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a machine information receiving unit for receiving machine information for registering said machine to be monitored by the local monitor unit and the first-type local computer network connected to said machine from the local monitor unit;

a global information getting unit for getting status information indicating the operation state of the machine to be monitored by the local monitor unit transmitted from said local monitor unit at a uniquely set timing through the second-type global computer network;

a status information management step of registering the gotten machine information in a given database and identifying the gotten status information for which machine connected to any one the first-type computer network based on said registered machine information and updating the storing information concerning the machine in the database by the identified status information;

a database management step of updating the database by the identified status information; and

a display step of displaying the updated information of the database on a given display.